

In the Specification:

Please amend the specification as shown:

Please delete the paragraph on page 3, line 25 to page 4, line 12 and replace it with the following paragraph:

Although the search for a vaccine has developed in this direction during the last years, the prior art describes a number of attempts of inducing a humoral immune response, i.e., formation of antibodies. Here, the point is to induce not only so-called binding antibodies, but also neutralizing antibodies, i.e., antibodies capable of preventing infection. A human, monoclonal antibody (2F5) described in 1993, which has been obtained via a cell culture from an HIV-positive patient, demonstrates that it is possible, in principle, to induce neutralizing antibodies in humans, and even in HIV-infected individuals. This antibody has a virus-neutralizing spectrum comprising virtually all subtypes of HIV; the antibodies bind to an epitope located at the N-terminal site of the transmembrane passage of the transmembranous envelope protein gp41. It has been possible to demonstrate that the antibodies interact with the ELDKWA (SEQ ID NO: 105) epitope. The obvious thing to do was therefore to inject this epitope in the form of a peptide or modified peptide, e.g. in cyclized form, into an organism so as to trigger an antibody response to said epitope and hence to the virus. Thus, J. Tian et al. (2002) suggest linear nonapeptides which have high affinity to the 2F5 antibody. However, it was invariably binding antibodies and never neutralizing antibodies that were induced following immunization with countless forms and modifications of the ELDKWA (SEQ ID NO: 105) epitope. There is general agreement in the art that induction of antiviral neutralizing antibodies does not represent a promising option of HIV prevention.

Please delete the paragraph on page 4, line 28 to page 5, line 10 and replace it with the following paragraph:

The investigations of Ferrantelli et al. (2003), who used neutralizing antibodies for passive immunization, showed that neutralizing antibodies such as the 2F5 antibody are suitable not only for prevention, but also in therapy, and apart from 2F5, the authors have disclosed further antibodies for passive immunization, such as IgG1b12, 2G12 and 4E10. Owing to its extraordinary immunogenicity, the V3 loop of the HIV surface protein gp120 is regarded as a promising agent to induce neutralizing antibodies, and the 1b12 and 2G12 neutralizing

antibodies are directed against gp120. Other surface proteins such as the above-mentioned gp41 are regarded as promising little success, because fusion with the target cell via said protein is so rapid that an antibody is not capable of interacting with said protein rapidly enough. Apart from the neutralizing antibodies usable in therapy, another therapy has been developed, which is directed against gp41. In this case, peptides are concerned which, being very small molecules, can interact effectively with the structures of gp41 responsible for infection (Weiss et al., 2003). One of these peptides, T-20, includes the above-described ELDKWA (**SEQ ID NO: 105**) sequence.

Please delete the paragraphs on page 19, line 7 to page 20, line 2 and replace them with the following paragraphs:

Preferred N-terminal sequences are:

FLGFLGAAGSTMGARSMTLTVQARQLLSGIVQQQNNLLRAIEAQQQ (**SEQ ID NO: 94**)
FLGAAGSTMGAASMTLTVQARQLLSGIVQQQNNLLRAIEAQQQHLL (**SEQ ID NO: 95**)
FLGAAGSTMGAASVTLTVQARLLSGIVQQQNNLLRAIEAQQQHML (**SEQ ID NO: 96**)
FLGFLGAAGSTMGAASITLTVQARQLLS (**SEQ ID NO: 7**)
FLGFLGAAGSTMGAASMTLTVQARQLLS (**SEQ ID NO: 8**)
FLGFLGAAGSTMGAASLTTLTVQARQLLS (**SEQ ID NO: 9**)
LLGFLGAAGSTMGAASITLTVQARQLLS (**SEQ ID NO: 10**)
FLGFLGAAGSTMGAASITLTVQVRQLLS (**SEQ ID NO: 11**)
FLGVLSAAGSTMGAATAALTVQTHTLMK (**SEQ ID NO: 12**)

Preferred C-terminal sequences are:

SQNQQEKNEQELLELDKWAGLWSWFSITNWLYWY (**SEQ ID NO: 97**)
SQNQQEKNEQELLELDKWASLWNWFNITNWLYWY (**SEQ ID NO: 98**)
SQTQQEKNEQELLELDKWASLWNWFDTNWLYWY (**SEQ ID NO: 99**)
NEQDLLALDKWASLWNWFDTNWLYIK (**SEQ ID NO: 13**)
NEQDLLALDKWANLWNWFDTNWLYIK (**SEQ ID NO: 14**)
NEQDLLALDKWANLWNWFDTNWLYIR (**SEQ ID NO: 15**)
NEQELLELDKWASLWNWFDTNWLYIK (**SEQ ID NO: 16**)
NEKDLLALDSWQNLWNWFDTNWLYIK (**SEQ ID NO: 17**)
NEQELLELDKWASLWNWFDTNWLYIK (**SEQ ID NO: 18**)
NEQELLALDKWASLWNWFDTNWLYIK (**SEQ ID NO: 19**)

NEQDLLALDKWDNLWSWFSITNWLWYIK (SEQ ID NO: 20)

NEQDLLALDKWASLWNWFDTKWLWYIK (SEQ ID NO: 21)

NEQDLLALDKWASLWNWFDTKWLWYIK (SEQ ID NO: 22)

NEKKLLELDEWASIWNWLDTKWLWYIK (SEQ ID NO: 23)

Please delete the paragraphs on page 21, line 10 to page 24, line 8 and replace them with the following paragraphs:

N: AVGLAIFLLVLAIMAITSSLVAATTLVNQHTTAKV (SEQ ID NO: 24)

C: SLSDTQDTFGLETSIFDHLVQLFDWTSWKDWIK (SEQ ID NO: 25),
preferably in BIV (transmembranous envelope protein gp40);

N: GVGLVIMLVIMAIIVAAAGASLGVANAIQQSYTKAAVQTLAN (SEQ ID NO: 26)

C: AMTQLAEEQARRIPEVWESLKDVFDWSGWFSWLKYI (SEQ ID NO: 27),
preferably in CAEV (transmembranous envelope protein);

N: FGISAIVAAIVATAIARSATMSYVALTEVNKIMEVQNH (SEQ ID NO: 28)

C: LAQSMITFNTPDSIAQFGKDLWSHIGNWIPGLGASIICKY (SEQ ID NO: 29),
preferably in EIAV1 (transmembranous envelope protein gp45);

N: SSSYSGTKMACPSNRGILRNWYNPVAGLRQSLEQYQVVKQPDYLLVPE (SEQ ID NO: 30)

C: MDIEQNNVQGKIGIQQLQKWEDWWRWIGNIPQYLK (SEQ ID NO: 31),
preferably in FIV (transmembranous envelope protein gp36);

N: GIGLVIVLAIMAIIAAAGAGLGVANAVQQSSYRTAVQSLANATAAQQN (SEQ ID NO: 32)

C: QVQIAQRDAQRIPDVWKALQEAFDWSGWFSWLKYIPW (SEQ ID NO: 33),
preferably in OMVV (transmembranous envelope protein gp41);

N: LGFLGFLATAGSAMGAASLVTAQSRTLLAVIVQQQQQLLDVV (SEQ ID NO: 34)

C: EEAQIQQEKNMYELWKLNWWDVFGNWFDLTSWDLTSWIKY (SEQ ID NO: 35),
preferably in SIVmac (transmembranous envelope protein gp41);

N: LGALGFLGAAGSTMGAAAVTLTVQARQLLSGIVQQQNNLL (SEQ ID NO: 36)

C: EEAQSQQEKNERDLLELDQWASLWNWFDTKWLWYIK (SEQ ID NO: 37),
preferably in SIVcpz (transmembranous protein gp41);

N: FLGFLGAAGSTMGARSMTLTVQARQLLSGIVQQQNNLLRAIEAQHQ (SEQ ID NO: 94)

FLGAAGSTMGAASMTLTVQARQLLSGIVQQQNNLLRAIEAQHQHLL (SEQ ID NO:

95)

FLGAAGSTMGAASVTLTVQARLLSGIVQQQNNLLRAIEAQQHML (SEQ ID NO:

96)

C: SQNQQEKNEQELLELDKWAGLWSWFSITNWLY (SEQ ID NO: 97)
SQNQQEKNEQELLELDKWASLWNWFNITNWLY (SEQ ID NO: 98)
SQTQQEKNEQELLELDKWASLWNWFDTNWLY (SEQ ID NO: 99)
preferably in HIV1 (transmembranous envelope protein gp41);

N: GIGLVIVLAIMAIIAAGAGLGVANAVQQSYRTAVGSLANATAAQQE (SEQ ID NO: 38)

C: EAALQVHIAQRDARRIPDAWKAIQEAFNNWSSWFSWLKY (SEQ ID NO: 39),
preferably in Visna virus (transmembranous envelope protein gp41);

N: LGFLGFLATAGSAMGARSLTSAQSRTLLAGIVQQQQQLL (SEQ ID NO: 40)

C: EEAQIQEKNMYELQKLNSWDILGNWFDLISWVKYIQ (SEQ ID NO: 41),
preferably in HIV-2 (transmembranous envelope protein gp36);

N: WGPTARIFASILAPGVAAAQALREIERLACWSVKQANLTTSL (SEQ ID NO: 42)

C: KFQLMKKHVNKIGVDSDPIGSWLRGIFGGIGEWAH (SEQ ID NO: 43),
preferably in RSV (transmembranous envelope protein gp37);

N: SVSHLSSDCNDEVQLWSVTARIFASFFAOGVAAQALKEIERLA

C: ALQAMKEHTEKIRVEDDOIGDWFTRTFGLLGGWLAK,
preferably in ALV (transmembranous envelope protein gp37);

N: GLSLIILGIVSLITLIATAVTACCSLAQSIQAAHTVDLSSQNVTKVMGT (SEQ ID NO: 46)

C: IENSPKATLNIADTVDNFLQNLFSNPSLHSLNKTL (SEQ ID NO: 47),
preferably in JSRV (transmembranous envelope protein gp36);

N: AVTLIPLLVGLGVSTAVATGTAGLGAVQSYTKLSHQLINDVQALSSTI (SEQ ID NO: 48)

C: KIKNLQEDLEKRRKALADNLFLTGLNGLLPYLLP (SEQ ID NO: 49),
preferably in SMRV (transmembranous envelope protein gp20);

N: AIQFIPLVIGLGITTAVSTGTAGLGVSFTWYTKLSHQLISDBQAISSTI

C: KIKNLQDDLEKRRKQLIDNPFWTGFHLLPYVMPL (SEQ ID NO: 51),
preferably in SRV (transmembranous envelope protein gp20);

N: AVSLTLAVLLGLGITAGIGGSTALIKGPIDLQQGLTSLQIAIDAD (SEQ ID NO: 54)

C: SMKKLKEKLDKRQLERQDSQNWYEGWFNNWPWFTT (SEQ ID NO: 55),
preferably in GALV (transmembranous envelope protein p15E);

N: EPVSLTLALLLGGLTGGIAGVGTGTTALVATQQFQQQLQAAMHD (SEQ ID NO: 56)

C: SMAKLRERLRSQRQKLFESQQGWFEGLFNKSPWFTT (SEQ ID NO: 57),
preferably in MuLV (transmembranous envelope protein p15E);

N: KALLEAQFRLQLQMQMHTDIQALEESISALEKSL (SEQ ID NO: 106)

C: NMAKLRLERLKQRQQLFDSQQGWFEGLWFNRSPWFTT (SEQ ID NO: 59),
preferably in FeLV (transmembranous envelope protein p15E);

N: TAALITGPQQLEKGLSNLHRIVTEDLQALEKSVSNL (SEQ ID NO: 101)

C: DHSGAIRDSMSKLRERLERRREREADQGWFEGLWFNRNS (SEQ ID NO: 135)
preferably in PERV (transmembranous envelope protein p15E);

N: TALIKGPIDLQQGLTSLQIAMDTDLRALQDSISKLED (SEQ ID NO: 103)

C: SMRRRLKERLDKRQLEHQKNLWSYEGWFNRSPWLTT (SEQ ID NO: 104)
preferably in KoRV (transmembranous envelope protein p15E);

N: SPVAALTGLALSVGLTGINVAVSALSHQRLTSIHVLEQDQQ (SEQ ID NO: 60)

C: PLSQRVSTDWQWPWNWDLGLTAWWRET (SEQ ID NO: 61),
preferably in BLV (transmembranous envelope protein of gp30);

N: AVPVAWLVSALAMGAGVAGGITGSMSLASGKSLHEV (SEQ ID NO: 62)

C: PILQERPPLENRVLTGWGLNWDLGLSQWAREALQ (SEQ ID NO: 63),
preferably in HTLV-1 (transmembranous envelope protein gp21);

N: AVPIAVWSVSALAAGTGIAGGVTGSLSLASSKSLLLEVD (SEQ ID NO: 64)

C: SVLQERPPLERKRVITGWGLNWDLGLSQWAREALQ (SEQ ID NO: 65),
preferably in HTLV-2 (transmembranous envelope protein gp30);

N: FPNINENTAYSGENENDCAELRIWSVQEDDLAAGLSWIPFFGPGI (SEQ ID NO:
66)

C: KNISEQIDQIKKDEQKIGRGWGLGGKWWTS DWG (SEQ ID NO: 67),
preferably in Marburg virus (transmembranous glycoprotein gp36);

N: LITGGRRTRREAIVNAQPKCNPNLHYWTQDEGAAIGLAWIPYFGPAA (SEQ ID NO:
68)

C: KNITDKIDQIIHDFVDKTL PDQGDNDNWWTGWRQWI (SEQ ID NO: 69),
preferably in Ebola (transmembranous protein GP2);

N: LITGRLQLQSLQTYVTQQLIRAAEIRASANLAATKMSECVLGQSKRVDF (SEQ ID
NO: 70)

C: DRLNEVAKNLNESLIDLQELKYEQYEKWPWYVV (SEQ ID NO: 71),
preferably in SARS virus (E2, transmembranous glycoprotein gp36);

N: GLFGAIAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAA (SEQ ID NO: 72)

C: HDVYRDEALNNRFQIKGVELKSGYKDWLISFA (SEQ ID NO: 73),
preferably in influenza virus (hemagglutinin-2, HA2);

N: FAGVVLAGAALGVATAAQITAGIALHQSMMLSSQAIIDL RASLETT (SEQ ID NO: 74)

C: IAKLEDAKELLESSKQILRSMKGLSSTSIVY (SEQ ID NO: 75),
preferably in measles virus (fusion protein F2);

N: FAGIAIGIAALGVATAAQVTAAVSLVQAQTNARAAAMKNSIQTNRA (SEQ ID NO: 76)
 C: TELSKVNDSLQNAVQKQIKESNHQLQSVSVSSK (SEQ ID NO: 77),
 preferably in mumps virus (fusion glycoprotein F2);
 N: FFGAVIGTIALGVATAAQITAGIALAEAREARKDIALIKDSIVKTH (SEQ ID NO: 78)
 C: TNFLEESKTELMKARAIISVGGWHNTESTQ (SEQ ID NO: 79),
 preferably in HPV-1 (F2 glycoprotein),

Please delete the paragraphs on page 25, line 13 to page 27, line 30 and replace them with the following paragraphs:

FLGFLGAAGSTMGAASITLTQARQLLS (SEQ ID NO: 7),
FLGFLGAAGSTMGAASMTLTQARQLLS (SEQ ID NO: 8),
FLGFLGAAGSTMGAASLTLTQARQLLS (SEQ ID NO: 9),
LLGFLGAAGSTMGAASITLTQARQLLS (SEQ ID NO: 10),
FLGFLGAAGSTMGAASITLTQVRQLLS (SEQ ID NO: 11),
FLGVLSAAGSTMGAAATALTQVTHTLMK (SEQ ID NO: 12),
FLGFLGAAGSTMGARSMTLTQARQLLSGIVQQQNNLLRAIEAQ (SEQ ID NO: 94)
FLGAAGSTMGAASMTLTQARQLLSGIVQQQNNLLRAIEAQHQHLL (SEQ ID NO: 95)
FLGAAGSTMGAASVTLTVQARLLSGIVQQQNNLLRAIEAQHQHML (SEQ ID NO: 96)
AVGLAIFLLVLAIMAITSSLVAATL VNQHTTAKV (SEQ ID NO: 24),
GVGLVIMLVIMAIIVAAAGASLGVANAIQQSYTKAAVQTLAN (SEQ ID NO: 26),
FGISAIVAAIVAATAIARSATMSYVALTEVNKIMEVQNH (SEQ ID NO: 28),
SSSYSGTKMACPSNRGILRNWNPVAGLRQSLEQYQVVKQPDYLLVPE (SEQ ID NO: 30),
GIGLVIVLAIMAIIAAAGAGAGLVANAVQQSSYRTAVQSLANATAAQQN (SEQ ID NO: 32),
LGFLGFLATAGSAMGAASLVTAQSRTLLAVIVQQQQQLLDVV (SEQ ID NO: 34),
LGALGFLGAAGSTMGAAAVTLTVQARQILSGIVQQQNNLL (SEQ ID NO: 36),
GIGLVIVLAIMAIIAAAGAGAGLVANAVQQSYRTAVGSLANATAAQQ (SEQ ID NO: 38),

LGFLGFLATGSAMGARSLTSAQSRTLLAGIVQQQQQL(SEQ ID NO: 40),
WGPTARIFASILAPGVAAAQALREIERLACWSVKQANLTS(SEQ ID NO: 42),
SVSHLSSDCNDEVQLWSVTARIFASFFAOGVAAQALKEIERLA,
GLSLIILGIVSLITLIATAVTACCSLAQSIQAAHTVDLSSQNVTKVMGT(SEQ ID NO:
46),
AVTLIPLLVGLGVSTAVATGTAGLGAVAVQSYTKLSHQLINDVQALSST(SEQ ID
NO: 48),
AIQFIPLVIGLGITTAVSTGTAGLGVSLTWYTKLSHQLISDBQAISSTI,
DPVSLTVALLGGLTMGSLAAGIGTGTAALIETNQFKQLQ(SEQ ID NO: 52),
AVSLTLAVLLGLGITAGIGGSTALIKGPIDLQQGLTSLQIAIDAD(SEQ ID NO: 54),
EPVSLTLALLGGLTGGIAGVGTGTTALVATQQFQQQLQAAMHD(SEQ ID NO:
56),
EPISLTVALMLGLTVGGIAAGCGTGTKALLEAQFLQLQMQMHTD(SEQ ID NO: 58),
SPVAALTLGLALSVGLTGINVAVSALSHQRLTSЛИHVLEQDQQ(SEQ ID NO: 60),
AVPVAWLVSALAMGAGVAGGITGSMSLASGKSLHEV(SEQ ID NO: 62),
AVPIAVWSVSALAAGTGIAGGVTGSLSLASSKSLLLEVD(SEQ ID NO: 64),
FPNINENTAYSGENENDCDAELRIWSVQEDDLAAGLSWIPFFGPGI(SEQ ID NO:
66), LITGGRRTRREAIVNAQPKCNPNLHYWTQDEGAAIGLAWIPYFGPAA(SEQ ID NO:
68),
LITGRLQSLQTYVTQQLIRAAEIRASANLAATKMSECVLGQSKRVDF(SEQ ID NO:
70),
GLFGAIAGFIENGWEGMIDGWYGFRHQNSEGTGQAADLKSTQAA(SEQ ID NO:
72),
FAGVVLAGAALGVATAAQITAGIALHQSMLSSQAIDNLRASLETT(SEQ ID NO: 74),
FAGIAIGIAALGVATAAQVTAAVSLVQAQTNARAAAMKNSIQTNR(SEQ ID NO:
76),
FFGAVIGTIALGVATAAQITAGIALAEAREARKDIALIKDSIVKTH(SEQ ID NO: 78),
the above preferably being N-terminal sequences, and

NEQDLLALDKWASLWNWFDITNWLWYIK (SEQ ID NO: 13),
NEQDLLALDKWANLWNWFDISNWLWYIK (SEQ ID NO: 14),
NEQDLLALDKWANLWNWFDITNWLWYIR (SEQ ID NO: 15),
NEQELLELDKWASLWNWFDITNWLWYIK (SEQ ID NO: 16),
NEKDLLALDSWQNLWNWFDITNWLWYIK (SEQ ID NO: 17),
NEQELLELDKWASLWNWFSITQWLWYIK (SEQ ID NO: 18),

NEQELLALDKWASLWNWFDISNWLWYIK (SEQ ID NO: 19),
NEQDLLALDKWDNLWSWFSITNWLWYIK (SEQ ID NO: 20),
NEQDLLALDKWASLWNWFDITKWLWYIK (SEQ ID NO: 21),
NEQDLLALDKWASLWNWFSITNWLWYIK (SEQ ID NO: 22),
NEKKLLELDEWASIWNWLDTKWLWYIK (SEQ ID NO: 23),
SQNQQEKNEQELLELDKWAGLWSWFSITNWLWY (SEQ ID NO: 97)
SQNQQEKNEQELLELDKWASLWNWFNITNWLWY (SEQ ID NO: 98)
SQTQQEKNEQELLELDKWASLWNWFDTNWLWY (SEQ ID NO: 99)
SLSDTQDTFGLETSIFDHLVQLFDWTSWKDWIK (SEQ ID NO: 25),
AMTQLAEEQARRIPEVWESLKDVFDWSGWFSWLKYI (SEQ ID NO: 27),
LAQSMITFNTPDSIAQFGKDLWSHIGNWIPGLGASIICKY (SEQ ID NO: 29),
MDIEQNNVQGKIGIQQQLQKWEDWVRWIGNIPQYLK (SEQ ID NO: 31),
QVQIAQRDAQRIPDVWVKALQEAFDWSGWFSWLKYIPW (SEQ ID NO: 33),
EEAQIQQEKNMYELWKLNNWWDVFGNWFDLTSWDLTSWIKY (SEQ ID NO: 35),
EEAQSQQEKNERDLLELDQWASLWNWFDTKWLWYIK (SEQ ID NO: 37),
EAALQVHIAQRDARRIPDAWKAIQEAFNNWSSWFSWLKY (SEQ ID NO: 39),
EEAQIQEKNMYELQKLNSWDILGNWFDLISWVKYIQ (SEQ ID NO: 41),
KFQLMKKHNKIGVDSDPIGSWLRGIFGGIGEWAH (SEQ ID NO: 43),
ALQAMKEHTEKIRVEDDOIGDWFTRTFGGLGGWLAK,
IENSPKATLNIADTVNFLQNLFSNPSLHSLNKT (SEQ ID NO: 47),
KIKNLQEDLEKRRKALADNLFLTGLNGLLPYLLP (SEQ ID NO: 49),
KIKNLQDDLEKRRKQLIDNPFWTGFLHPYVMPL (SEQ ID NO: 51),
SMAKLRRERFKQRQKLFESQQGQFEGWYNKSPWETT (SEQ ID NO: 53),
SMKKLKEKLDKRQLERQDSQNWYEGWFNNWPWF (SEQ ID NO: 55),
SMAKLRRERLSQRQKLFESQQGWFEGFNKSPWF (SEQ ID NO: 57),
NMAKLRRERLKQRQQLFDSQQGWFEGLFNKSPWF (SEQ ID NO: 59),
PLSQRVSTDWQWPWNWDLGLTAWVRET (SEQ ID NO: 61),
PILQERPPLENRVLTGGLNWDLGLSQWAREALQ (SEQ ID NO: 63),
SVLQERPPLERKRVITGGLNWDLGLSQWAREALQ (SEQ ID NO: 65),
KNISEQIDQIKKDEQKIGRGWGLGGKWWTSWDWG (SEQ ID NO: 67),
KNITDKIDQIIHDFVDKTPDQGDNDNWWTGWRQWI (SEQ ID NO: 69),
DRLNEVAKNLNESLIDLQELKYEQYEKWPWYVW (SEQ ID NO: 71),
HDVYRDEALNNRFQIKGVELKSGYKDWLISFA (SEQ ID NO: 73),
IAKLEDAKELLESSKQILRSMKGLSSTSIVY (SEQ ID NO: 75),
TELSKVNASLQNAVQKQIKESNHQLQSVSVSSK (SEQ ID NO: 77),

**TNFLEESKTELMKARAIISVGGWHNTESTQ (SEQ ID NO: 79),
and the latter preferably being C-terminal sequences.**

Please delete the paragraphs on page 31, line 26 to page 32, line 12 and replace them with the following paragraphs:

a) synthetic peptides E1 (LGAAGSTMGAASVTLTVQARLLLS (**SEQ ID NO: 5**), FLGAAGSTMGAASMTLTVQARQLLSGIVQQQNNLLRAIEAQQHLL (**SEQ ID NO: 95**) and E2 (NEQELLELDKWASLWNWFDTNWL (**SEQ ID NO: 6**) or SQNQQEKENEQELLELDKWASLWNWFNITNWLWY (**SEQ ID NO: 98**))

b) hybrid I (HIV sequences underlined)

LITQARQLLSDIVQQQRIVTEDLQALEKSVSNLEESLTSLEVVVLQNRRGLDLLFLKKEGLCV
ALKEECCFYVDHSGAIRDSMSKLRERLERRRREELDKWASLWNWFN (**SEQ ID NO: 82**)

c) hybrid II (HIV sequences underlined)

LITGASVTLTVQARQLLSDIVQQQRIVTEDLQALEKSVSNLEESLTSLEVVVLQNRRGLDLLF
LKKEGLCVALKEECCFYVDHSGAIRDSMSKLRERLERRRREELDKWASLWNWFNITNWL
WY (**SEQ ID NO: 83**)

d) loop I: (HIV sequences underlined)

LGAAGSTMGAASVTLTVQARLLSSSPSSNEQELLELDKWASLWNWFDTNWL (**SEQ ID NO: 84**)

Please delete the paragraph on page 38, lines 4-14 and replace it with the following paragraph:

The invention also relates to the amino acid sequences in accordance with SEQ ID Nos. 1-104, especially for use in medicine. These sequences represent a selection of well-known larger amino acid sequence regions, the above selection furnishing the surprising result of inducing neutralizing antibodies, especially when at least two of the amino acid sequences are used in combination. These amino acid sequences are particularly preferred in the context with a medical indication, i.e., as amino acid sequences to be used for a specific purpose. Of course, the well-known sequence ELDKWA (**SEQ ID NO: 105**) and other

sequences disclosed in the above-mentioned references will not be claimed herein. The invention also relates to the neutralizing antibodies produced using the immunogenic construct according to the invention.

Please delete the paragraphs on page 45, line 17 to page 47, line 13 and replace them with the following paragraphs:

Recombinant CBP fusion proteins

rgp41:

MGCTSM~~TLTVQARQLLSDIVQQQ~~NNLLRAIEAQ~~QHLLQLT~~WGIKQLQARI~~LAVERYLKDQ~~
QLLG~~IWGCSGK~~LC~~TTAVPWN~~ASWSNKSLEQ~~WI~~NNMTW~~MEWDREINNY~~TSIHS~~LIE~~ESQ
NQ~~QE~~KNEQ~~ELLELDK~~W~~ASLWNWF~~NIT~~NWLWY~~**IK (SEQ ID NO: 85)**

Hybrid I (HIV sequences underlined)

LITQARQLLSDIVQQQRIVTEDLQALEKSVSNLEESLTSLSEVVLQNRRGLDLLFLKKEGLCV
ALKEECCFYVDHSGAIRDSMSKLRERLERRRREELDKW~~ASLWNWF~~NIT~~NWL~~**WY (SEQ ID NO: 82)**

Hybrid II (HIV sequences underlined)

LITGASVTLTVQARQLLSDIVQQQRIVTEDLQALEKSVSNLEESLTSLSEVVLQNRRGLDLLF
LKKEGLCVALKEECCFYVDHSGAIRDSMSKLRERLERRRREELDKW~~ASLWNWF~~NIT~~NWL~~**WY (SEQ ID NO: 83)**

Loop I (HIV sequences underlined)

LGAAGSTMGAASVTLTVQARLLSSSPSSNEQELLELDKW~~ASLWNWF~~DIT~~NWL~~**(SEQ ID NO: 84)**

Ectodomain of p15E from FeLV (amino acids 476-583):

LETAQFRQLQMAMHTDIQALEE~~SISALE~~KSLTSLSEVVLQNRRGLDILFLQE~~GG~~LC~~AA~~
KEECCFYADHTGLVRDNMAKLRERLKQRQLFDSQQGWFEGWFNKSPW**(SEQ ID NO: 100)**

Primers:

rgp41 BamHI fw: cgc gga tcc atg ggc tgc acg tca atgacg ctg **(SEQ ID NO: 107)**

rgp41 Xhol rev: cac ccg ata ctc gag ata cca cag cca att tgt tat g**(SEQ ID NO: 108)**

Hybrid I BamHI fw: cgc cca tcc cta atc aca caa gcg aga cag ctg (**SEQ ID NO: 109**)

Hybrid I Xhol rev: cac ccg ata ctc gag tca gtt gaa cca gtt c~~a~~ aag (**SEQ ID NO: 110**)

Hybrid I E1mut fw: caa gcg aga cag ctg agt gat att gtt cag caa caa cga att gta acg gaa gat
ctc caa gcc c (**SEQ ID NO: 111**)

Hybrid I E1mut rev: ttg ttg ctg aac aat atc act cag cag ctg tct cgc ttg tgt gat tag gga tcc acg
cg~~g~~ (**SEQ ID NO: 112**)

Hybrid I E2mut fw: gaa ctg gat aag tgg gcg tcg ctt tgg aac tgg ttc aac tga gaa ttc aga ctc cag
ggg tcg act cga gc (**SEQ ID NO: 113**)

Hybrid I E2mut rev: gtt cca aag cca cgc cca ctt atc cag ttc ttc cct tcg acg cct ctc taa cct ttc tc
(**SEQ ID NO: 114**)

Hybrid II BamHI fw: cg gga tcc gga gca tca gta acg ctg acg gta cag cgg aga caa ta ttg tgt gat
ata g (**SEQ ID NO: 115**)

Hybrid II Xhol rev: cg ctc gag cta ata cca cag cca att tct tat gtt aaa cca att cca caa act tgc
cca tt (**SEQ ID NO: 116**)

Loop I BamHI fw: ggg gat ccc agc ca ttg gag atg tcg aac cag ttc cac aa gaa gcc cat ttg tcc
agt tcc agc agt tcc tgt tcg tta gaa gac gga gaa gac a (**SEQ ID NO: 117**)

Loop I Xhol rev: ccg gat ccc tgg gtg ctg ctg gtt cta cca tgg gtg ctg ctt ctg tta ccc tga ccg ttc
agg ctc gtc tgc tgt ctt ctt ctc cgt ctt cta acg a (**SEQ ID NO: 118**)

P15E FeLV fw: gcg gat ccc ttg aaa cag ccc agt tca gac aa (**SEQ ID NO: 119**)

p15E FeLV rev: cg~~g~~ aat tcc cag ggg gac ttg ttg aac cat cc (**SEQ ID NO: 120**)

Please delete the paragraph on page 47, line 31 to page 48, line 12 and replace it with the following paragraph:

Synthetic peptides corresponding to the sequences of the epitopes E1 and E2 of HIV (E1 (LGAAGSTMGAASVTLTVQARLLS (SEQ ID NO: 5)) and E2 (NEQELLELDKWASLWNWFDITNWL (SEQ ID NO: 6)) were produced by Jerini Company and purified by means of HPLC. E1 and E2 were used as free antigens (in combination or alone) or on dextran (MW 6 kDa, Sigma). The production of dextran-peptide conjugates was effected either via direct binding of the carboxyl groups included in activated dextran to primary amino groups of the peptides (28), or via a heterobifunctional crosslinker (3-(2-pyridyldithio)propionyl hydrazide, PDPH, Pierce) allowing specific coupling via cysteines attached to the C- or N-terminal end of the peptides (29); overlapping synthetic peptides corresponding to the overall Env (gp120 and gp41) of HIV were obtained from NIH, USA (HIV-Env Peptide Set derived from HIV-1 Isolate MN, Cat#6451). Overlapping and immobilized peptides corresponding to gp41 or p15E of FeLV were produced by Jerine.

Please delete the paragraphs on page 52, lines 18-30 and replace them with the following paragraphs:

The human monoclonal antibody (mAb) 2F5 shows a wide neutralization spectrum to laboratory strains and other primary isolates. Several teams have demonstrated that the antibody binds to a linear sequence (ELDKWA (SEQ ID NO: 105)) within the ectodomain of the transmembranous envelope protein gp41 of HIV-1. This sequence is located a few amino acids from the N terminus of the transmembrane passage. Using an epitope mapping method based on a Pepspot membrane, it was possible to confirm this sequence as a binding site for 2F5 (Fig. 3).

2.2 Binding of the monoclonal antibody 2F5 to Dp178 and CBP-rgp41

As was demonstrated in Western blot analyses, the mAb 2F5 has improved binding to the entire ectodomain of gp41 as compared to the 34mer peptide (Dp178) comprising the epitope ELDKWA (SEQ ID NO: 105) described in the literature (Fig. 4).

Please delete the paragraph on page 53, lines 17-24 and replace it with the following paragraph:

To test to what extent amino acid substitutions in the peptide P6342 would have an influence on enhanced binding of 2F5 to the sequence ELDKWA (**SEQ ID NO: 105**), the peptide P6373 (NEQELLEELDKWASLW (**SEQ ID NO: 121**)) was applied together with modified peptides (P6342 mut 1-5) on ELISA plates and incubated with 2F5 at a concentration of 3 M urea. Fig. 6 shows the evaluation of the ELISA after subtraction of the absorption of 2F5 on P6373 alone. It was found that amino acid substitutions in at least 4 positions of peptide P6342 reduces binding of the monoclonal antibody 2F5.

Please delete the paragraph on page 54, lines 1-3 and replace it with the following paragraph:

It was shown that a 2:1 ratio of P6342 to P6373 results in a significantly enhanced binding of 2F5 to ELDKWA (**SEQ ID NO: 105**) as compared to a ratio of 1:1, implying that two P6342 peptides give better stabilization of ELDKWA (**SEQ ID NO: 105**) than one.

Please delete the paragraph on page 58, lines 7-12 and replace it with the following paragraph:

Fig. 3: Epitope mapping for mAb 2F5 using a Pepspot membrane: 13mer peptides were covalently bound to a nitrocellulose membrane via an acetyl linker. From spot to spot, these peptides overlap by 11 amino acids, covering the entire sequence of gp41. The mAb 2F5 was used at a concentration of 250 ng/ml. The secondary antibody conjugate (anti-human POD) was used at 1:5000. The epitope in the sequence (**SEQ ID NO: 122**) of gp41 is underlined.

Please delete the paragraphs on page 58, line 21 to page 59, line 12 and replace them with the following paragraphs:

Fig. 5: ELISA investigations on binding of mAb 2F5 to Dp178 in combination with overlapping peptides of the ectodomain of gp41: The NIH peptide set comprises 15mer

peptides, each overlapping by 11 amino acids and comprising the entire protein sequence of the envelope protein complex. All peptides were tested in combination with Dp178, but only the results for 10 peptides from the N-terminal region of the ectodomain of gp41 are shown. (A) The peptide P6342, but not all of the others, enhanced binding of 2F5 to Dp178. Enhanced binding of 2F5 is synergistic, because mAb 2F5 alone does not recognize P6342, and is still observed with 3 M and 5 M urea. The diagram shows mean values from triplicates. (B) Sequences of the peptides (SEQ ID NOS 123-133, respectively, in order of appearance) employed. DP107 corresponds to the N helix of the ectodomain of gp41 and was co-run as a control.

Please delete the paragraph on page 59, lines 6-12 and replace it with the following paragraph:

P6342:	AASVTLTVQARLLS (<u>SEQ ID NO: 86</u>)
P6342 mut1:	AAAATLTQVQARLLS (<u>SEQ ID NO: 87</u>)
P6342 mut2:	AASVAATVQARLLS (<u>SEQ ID NO: 88</u>)
P6342 mut3:	AASVTLAAQARLLS (<u>SEQ ID NO: 89</u>)
P6342 mut4:	AASVTLTVAAARLLS (<u>SEQ ID NO: 90</u>)
P6342 mut5:	AASVTLTVQAAALLS (<u>SEQ ID NO: 91</u>)

Please delete the paragraph on page 59, lines 21-26 and replace it with the following paragraph:

Fig. 8: Real-time PCR; (A) Inhibition of the 2F5-dependent virus neutralization by the peptides E1 and E2.

The diagram shows the ct values when using a cell lysate following treatment with varying amounts of E1 (LGAAGSTMGAASVTLTVQARLLS (SEQ ID NO: 5)) and E2 (NEQELLELDKWASLWNWFDT NWL (SEQ ID NO: 6)) during infection with HIV. 2F5 was used at a concentration of 2.5 µg/ml.

Please delete the paragraph on page 60, lines 26-32 and replace it with the following paragraph:

Fig. 13: Epitope mapping of FeLV-neutralizing serums

Following immunization with the recombinant ectodomain of p15 from FeLV, goat serum 27, 10 rat serums and antibodies purified using affinity chromatography were mapped as described in Fig. 3. Overlapping peptides (**SEQ ID NO: 134**) corresponding to the ectodomain of p15 from FeLV were used. IgG: Prot G-purified antibodies, p15E-P15E-purified antibodies. The four most important epitope domains are framed.

Please delete the paragraphs on page 62, line 1 to page 65, line 11 and replace them with the following paragraphs:

Reference list of amino acid sequences

SEQ ID No 1 QARQLLSDIVQQQ,
SEQ ID No 2 ELDKWASLWNWFN,
SEQ ID No 3 GASVTLTVQARQLLSDIVQQQ,
SEQ ID No 4 ELDKWASLWNWFNITNWLY,
SEQ ID No 5 LGAAGSTMGAASVTLTVQARQLLS,
SEQ ID No 6 NEQELLELDKWASLWNWFDTNWLY,
SEQ ID No 7 FLGFLGAAGSTMGAASITLTQARQLLS,
SEQ ID No 8 FLGFLGAAGSTMGAASMTLTQARQLLS,
SEQ ID No 9 FLGFLGAAGSTMGAASLTQARQLLS,
SEQ ID No 10 LLGFLGAAGSTMGAASITLTQARQLLS,
SEQ ID No 11 FLGFLGAAGSTMGAASITLTQVRQLLS,
SEQ ID No 12 FLGVLSAAGSTMGAATAALTVQTHTLMK,
SEQ ID No 13 NEQDLLALDKWASLWNWFDTNWLYIK,
SEQ ID No 14 NEQDLLALDKWANLWNWFDISNWLYIK,
SEQ ID No 15 NEQDLLALDKWANLWNWFDTNWLYIR,
SEQ ID No 16 NEQELLELDKWASLWNWFDTNWLYIK,
SEQ ID No 17 NEKDLLALDSWQNLWNWFDTNWLYIK,
SEQ ID No 18 NEQELLELDKWASLWNWFSDITQWLWYIK,
SEQ ID No 19 NEQELLALDKWASLWNWFDISNWLYIK,
SEQ ID No 20 NEQDLLALDKWDNLWSWFSITNWLYIK,
SEQ ID No 21 NEQDLLALDKWASLWNWFDTKWLWYIK,
SEQ ID No 22 NEQDLLALDKWASLWNWFSDITNWLYIK,
SEQ ID No 23 NEKKLLELDEWASIWNWLDTKWLWYIK,

SEQ ID No 24 AVGLAIFLLVLAIMAITSSLVAATTLVNQHTTAKV,
SEQ ID No 25 SLSDTQDTFGETSIFDHLVQLFDWTSWKDWIK,
SEQ ID No 26 GVGLVIMLVIMAIVAAAGASLGVANAIQQSYTKAAVQTLAN,
SEQ ID No 27 AMTQLAEEQARRIPEVWESLKDVFDSGWFSWLKYI,
SEQ ID No 28 FGISAIVAAIVAATAIARSATMSYVALTEVNKIMEVQNH,
SEQ ID No 29 LAQSMITFNTPDSIAQFGKDLWSHIGNWIPGLGASIICKY,
SEQ ID No 30
SSYSGTKMACPSNRGILRNWYNPAGLRQSLEQYQVVKQPDYLLVPE,
SEQ ID No 31 MDIEQNNVQGKIGIQQQLQKWEDWVRWIGNIPQYLK,
SEQ ID No 32 GIGLVIVLAIMAIIAAAGAGLGVANAVQQSSYTRTAVQSLANATAAQQN,
SEQ ID No 33 QVQIAQRDAQRIPDVWKLQEAQFDWSGWFSWLKYIPW,
SEQ ID No 34 LGFLGFLATAGSAMGAASLVTAQSRLLAVIVQQQQQLLDVV,
SEQ ID No 35 EEAQIQQEKNMYELWKLNWWDVFGNWFDLTSWDLTSWIKY,
SEQ ID No 36 LGALGFLGAAGSTMGAAAVTLTVQARQLLSGIVQQQNNLL,
SEQ ID No 37 EEAQSQQEKNERDLLELDQWASLWNWFDTKWLWYIK,
SEQ ID No 38 GIGLVIVLAIMAIIAAAGAGLGVANAVQQSSYTRTAVGSLANATAAQQE,
SEQ ID No 39 EAALQVHIAQRDARRIPDAWKAIQEAFFNNWSSWFSWLKY,
SEQ ID No 40 LGFLGFLATAGSAMGARSLTSAQSRTLLAGIVQQQQQL
SEQ ID No 41 EEAQIQQEKNMYELQKLNNSWDILGNWFDLISWVKYIQ,
SEQ ID No 42 WGPTARIFASILAPGVAAAQALREIERLACWSVKQANLTTSL,
SEQ ID No 43 KFQLMKKHNKIGVDSPIGSWLRGIFGGIGEWAH,
SEQ ID No 44 SVSHLSSDCNDEVQLWSVTARIFASFFAOGVAAQALKEIERLA,
SEQ ID No 45 ALQAMKEHTEKIRVEDDOIGDWTRTFGGLGWLA,
SEQ ID No 46 GLSLIILGIVSLITLIATAVTACCSLAQSIQAAHTVDLSSQNVTKVMGT,
SEQ ID No 47 IENSPKATLNIADTVNFLQNLFSNFPSLHSLNKT,
SEQ ID No 48 AVTLIPLLVGLGVSTAVATGTAGLGVAVQSYTKLSHQLINDVQALSSTI,
SEQ ID No 49 KIKNLQEDLEKRRKALADNLFLTGLNGLLPYLLP,
SEQ ID No 50 AIQFIPLVIGLGITTAVSTGTAGLGVSLTWYTKLSHQLISDBQAISSSTI,
SEQ ID No 51 KIKNLQDDLEKRRKQLIDNPFWTGFHLLPYVMPL,
SEQ ID No 52 DPVSLTVALLGGLTMGSLAAGIGTGTAAIETNQFKQLQ,
SEQ ID No 53 SMAKLRERFKQRQKLFESQQGQFEGWYNKSPWETT,
SEQ ID No 54 AVSLTLAVLLGLGITAGIGGSTALIKGPIDLQQGLTLSQIAIDAD,
SEQ ID No 55 SMKKLKEKLDKRQLERQDSQNWYEGWFNNWPWFETT,
SEQ ID No 56 EPVSLTLALLGGLTGGIAGVGTGTTALVATQQFQQLQAAMHD,
SEQ ID No 57 SMAKLRERLSQRQKLFESQQGWFEGLFNKSPWFETT,
SEQ ID No 58 EPISLTVALMLGLTVGGIAAGCGTGTKALLEAQFLQLQMQMHTD,

SEQ ID No 59 NMAKLRERLKQRQQLFDSQQGWFEGLWFNRSPWF,TT,
SEQ ID No 60 SPVAALTGLALSVGLGINAVSALSHQRLTSIHVLEQDQQ,
SEQ ID No 61 PLSQRVSTDWQWPWNWDLGLTAWVRET,
SEQ ID No 62 AVPVAWLVSALAMGAGVAGGITGSMSLASGKSLHEV,
SEQ ID No 63 PILQERPPLENRVLTGWLGNWDLGLSQWAREALQ,
SEQ ID No 64 AVPIAVWSVSALAAGTGIAGGVTGSLSLASSKSLLLEVD,
SEQ ID No 65 SVLQERPPLEKRVITGWGLNWDLGLSQWAREALQ,
SEQ ID No 66 FPNINENTAYSGENENDCDAELRIWSVQEDDLAAGLSWIPFFGPGI,
SEQ ID No 67 KNISEQIDQIKKDEQKIGRGWGLGGKWWTS DWG,
SEQ ID No 68 LITGGRRTRREAIVNAQPKCNPNLHYWTQDEGAAIGLAWIPYFGPAA,
SEQ ID No 69 KNITDKIDQIIHDFVDKTL PDQGDNDNWWTGWRQWI,
SEQ ID No 70 LITGRLQLSQLTYVTQQLIRAAEIRASANLAATKMSECVLGQSKRVDF,
SEQ ID No 71 DRLNEVAKNLNESLIDLQELKYEQYEKWPWYVW,
SEQ ID No 72 GLFGAIAGFIENGWEGMIDGWLGYFRHQNSEGTGQAADLKSTQAA,
SEQ ID No 73 HDVYRDEALNNRFQIKGVELKSGYKDWLISFA,
SEQ ID No 74 FAGVVLAGAALGVATAAQITAGIALHQSMMLSSQAI DNL RASLETT,
SEQ ID No 75 IAKLEDAKELLESSKQILRSMKGLSSTSIVY,
SEQ ID No 76 FAGIAIGIAALGVATAAQVTAAVSLVQAQTNARAAMKNSIQTNRA,
SEQ ID No 77 TELSKVN ASLQNAVQKQIKESNHQLQSVSVSSK,
SEQ ID No 78 FFGAVIGTIALGVATAAQITAGIALAEAREARKDIALIKDSIVKTH,
SEQ ID No 79 TNFLEESKTEL MKARAII SVGGWHNTESTQ.
SEQ ID No 80 LGAAGSTMGAASVTLTVQARLLLS) and
SEQ ID No 81 NEQELLELDKWA SLWNWF DIT NWL
SEQ ID No 82
LITQARQLLSDIVQQQRIVTEDLQALEKSVSNLEESLTSLS EWLQNRG LDLLFLKKEG
LCVALKEECCFYVDHSGAIRDSMSKLRERLERRRREELDKWA SLWNWF N
SEQ ID No 83
LITGASVTLTVQARQLLSDIVQQQRIVTEDLQALEKSVSNLEESLTSLS EWLQNRG LD
LLFLKKEGLCVALKEECCFYVDHSGAIRDSMSKLRERLERRRREELDKWA SLWNWF NI
TNWLWY
SEQ ID No 84
LGAAGSTMGAASVTLTVQARLLSSSPSSNEQELLELDKWA SLWNWF DIT NWL
SEQ ID No 85
MGCTSMTLTQARQLLSDIVQQQNNLLRAIEAQHQLLQLTVWGIKQLQARILAVERYLK
DQQQLGIWGCSGKLI CTTAVPWNASWSNKSLEQIWNMNTWMEWDREINNYTSIHS LI
EESQNQQEKNEQELLELDKWA SLWNWF NITNWLWYIK

SEQ ID No 86 AASVTLTVQARLLS
SEQ ID No 87 AAAATLTVQARLLS
SEQ ID No 88 AASVAATVQARLLS
SEQ ID No 89 AASVTLAAQARLLS
SEQ ID No 90 AASVTLTVAARLLS
SEQ ID No 91 AASVTLTVQAAALLS
SEQ ID No 92 LGAAGSTMGAASVTLTVQARLLS
SEQ ID No 93 NEQELLELDKWASLWNWFDTNW
SEQ ID No 94 FLGFLGAAGSTMGARSMTLTVQARQLLSGIVQQQNNLLRAIEAQ
SEQ ID No 95 FLGAAGSTMGAASMTLTVQARQLLSGIVQQQNNLLRAIEAQ
SEQ ID No 96 FLGAAGSTMGAASVTLTVQARLLSGIVQQQNNLLRAIEAQ
SEQ ID No 97 SQNQQEKNEQELLELDKWAGLWSWFSITNW
SEQ ID No 98 SQNQQEKNEQELLELDKWASLWNWFNTNW
SEQ ID No 99 SQTQQEKNEQELLELDKWASLWNWFDTNW
SEQ ID No 100
LETAQFRQLQMAMHTDIQALEESISALEKSLTSLS
EVVLQNRRGLDILFLQEGGLC
AALKEECCFYADHTGLVRDNMAKLRRERLKQRQQLFDSQQGW
FEGWFNKP
SEQ ID No 101 TAALITGPQQLEKGLSNLHRIVTEDLQALEKS
VSNL
SEQ ID No 102 DHSGAIRDSMSKLRERLERRRREREADQDS
ISKLED
SEQ ID No 103 TALIKGPIDLQQGLTS
LQIAMDTDLRALQDS
ISKLED
SEQ ID No 104 SMRRRLKERLDKRQLEHQKNL
SWYEGWFNRSPWLTT